unit includes a receiver (or a transceiver) for receiving the digital data from the communication medium. In one aspect according to the invention, the video signal is carried in an analog form over the communication medium, respectively using an analog transmitter and an analog receiver.

The communication between the electric shaver assembly and the display unit can be non-conductive over-the-air wireless, using radio, audio or light based communication, and use various WLAN, WPAN and other technologies. The wireless communication may use a spread-spectrum signal such as multi-carrier (e.g. OFDM, DMT and CDMA), or a single carrier (narrow-band) signal. Each of the wireless signals or the wireless communication links above may be WPAN, WLAN, WMAN, WAN, BWA, LMDS, MMDS, WiMAX, HIPERMAN, IEEE802.16, Bluetooth, IEEE802.15, IEEE802.11 (such as a, b and g), UWB, ZigBee and cellular such as GSM, GPRS, 2.5G, 3G, UMTS, DCS, PCS and CDMA. Similarly, each of the frequency bands above may be part of the ISM frequency bands.

Further, such communication can use a conductive medium such as cables or wires, or any other metallic medium. Standard PAN or LAN cabling and protocols may be used, such as Ethernet 10/100/1000BaseT. In one embodiment, powerline communication is used wherein the AC power wiring is used as the communication medium.

In another aspect of the present invention, a lossy or non-lossy compression of the image information is used for reducing the memory size and reducing the data rate required for the transmission over the communication medium. In this configuration, video compression functionality is added to the shaver, and a video de-compressor is added to the display unit for reconstructing the original signal.

In another aspect of the present invention, one or more light sources are added for better illumination of the photographed area or the shaving area.

In another aspect of the present invention, multiple image capturing mechanisms are used, each containing a lens and image sensor, allowing for capturing of larger shaving area. In one embodiment, each such image capturing can be mounted on a different wall or side of the electric shaver. In one embodiment, the lens is mounted in the cutter side of the shaver, which is in direct contact with the skin surface during shaving.

In another aspect of the present invention, digital image processing is used to analyze the captured image and notify the user (on the display or otherwise) of the results of such analysis. Individual hairs as well as hairy areas can be identified and marked.

In another aspect of the present invention, zooming and still image capturing features are provided, as well as other features commonly associated with still digital cameras and video cameras such as camcorders. Other controls such as brightness may also be provided.

In another aspect of the present invention, various controls are provided to the user by means of buttons and switches located as part of the electric shaver, or as part of the display unit or in both. Various visual indicators can also be employed.

In another aspect of the present invention, the camera added hardware in the shaver is powered from the same power source as the shaver itself, such as a battery (either primary or rechargeable) or from a domestic AC power. Similarly, the display unit may be powered locally from a battery or from the AC power. Further, the cable connecting between the electric shaver and the display unit (for example serving as the communication medium) can also be used to concurrently carry power either from the shaver to power the display unit or from the display unit to power the electric shaver unit.

In another aspect of the present invention, a single cable is used to connect the display unit with the electric shaver. The cable simultaneously carries both the communication signal for displaying the captured image on the display, and a power signal. The power signal can be fed from the display unit to power the electric shaver and its camera module, or alternately fed from the shaver to power the display unit. Carrying both the power and data signals over the same cable can make use of distinct separated wire sets, each set dedicated to one type of a signal. Alternatively, the same wires can carry both signals each over a different frequency band (FDM) or using phantom technique.

In another aspect of the present invention, the captured image is transmitted from the electric shaver using a standard analog or digital video interface, thus allowing the displaying of the video on standard and common video equipment.

One aspect of the present invention involves an electrically operated hair removing device for removing hair from a skin area, containing a casing, the casing further including a camera module for imaging at least part of the skin area, the camera module containing an optical lens for focusing received light mechanically oriented to guide the image of at least part of the skin area, a photosensitive image sensor array disposed approximately at an image focal point plane of the optical lens for capturing the image and producing electronic image information representing the image, and an analog to digital (A/D) converter coupled to the image sensor for generating digital data representation of the image. The image sensor may be based on Charge-Coupled Devices (CCD) or Complementary Metal-Oxide-Semiconductor (CMOS). The device may further contain an electric motor and a cutter driven by the motor, and may be power fed from a battery that is rechargeable or a primary type.

Further, the device may be operative to transmit the image digital data representation over a communication medium, and in such case may contain a port for coupling a signal to the communication medium, an image processor coupled to the analog to digital converter and for generating a digital data video signal carrying a digital data video according to a digital video format, and a transmitter coupled between the port and the image processor for transmitting the digital data video signal to the communication medium. The digital video format may be based on one out of: TIFF (Tagged Image File Format), RAW format, AVI, DV, MOV, WMV, MP4, DCF (Design Rule for Camera Format), ITU-T H.261, ITU-T H.263, ITU-T H.264, ITU-T CCIR 601, ASF, Exif (Exchangeable Image File Format) and DPOF (Digital Print Order Format) standards. Further, the device may be operative to compress the digital data video, and in such a case may further contain a video compressor coupled between the analog to digital (A/D) converter and the transmitter for compressing the digital data video before transmission to the communication medium. The compression may be based on intraframe or interframe compression, and can further be lossy or non-lossy compression. The communication over the communication medium may be half-duplex or full-duplex, and the device may further contain a receiver coupled to the port for receiving information from the communication medium.

In the case of using compression, the compression is based on a standard compression algorithm that is one or more out of JPEG (Joint Photographic Experts Group) and MPEG (Moving Picture Experts Group), ITU-T H.261, ITU-T H.263, ITU-T H.264 and ITU-T CCIR 601. For example, the